

## ON THE BUTEONINE SUBGENUS CRAXIREX, GOULD.

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The genus *Buteo* as restricted<sup>1</sup> is divided primarily into two very distinct groups, one (typical *Buteo*) having four and the other (*Craxirex*) having only three of the outer primaries emarginated on their inner webs. The European *B. vulgaris*, Leach, the type of the genus, belongs to the first group; its American allies are *B. borealis* (Gm.), *B. harlani* (Aud.), *B. cooperi*, Cass., *B. lineatus* (Gm.), *B. abbreviatus*, Caban., *B. minutus*, Pelz., and *B. brachyura*, Vieill.; while the Old World contains more numerous representatives of the subgenus.<sup>2</sup> The subgenus *Craxirex* is peculiar to America, the majority of the species belonging to the southern continent. North America possesses only *C. swainsoni*, Bonap.,

<sup>1</sup> At present we exclude from the genus *Buteo* the closely related forms named respectively *Heteraëtus*, Kaup (type *Spizaëtus melanoleucus*, Vieill.), *Urubitinga*, Lafr. (type *Fulco urubitinga*, Gm. = *U. zonura* [Shaw]), *Heterospizias*, Sharpe (type *Fulco meridionalis*, Lath.), *Antenor*, Ridgw. (type *Fulco uncinatus*, Temm.), *Buteogallus*, Less. (type *Fulco equinocialis*, Gm.), *Leucopternis*, Kaup (type *Fulco melanops*, Lath.), *Asturina*, Vieill. (type *Fulco nitidus*, Lath.), *Rupornis*, Kaup (type *Falco magnirostris*, Gm.), *Onychotes*, Ridgw. (type *O. gruberi*, Ridgw.), *Urubitornis*, Verr. (type *Circaëtus solitarius*, Tschudi), and *Harpyhaliaëtus*, Lafr. (type *Harpyia coronata*, Vieill.). *Busarellus*, Lafr. (type *Fulco nigricollis*, Lath.), placed in most of the systems in close proximity to *Buteogallus*, and often in the same genus, we consider to be far removed from any of the above genera, being more closely related to the Haliaëtine forms, especially to *Gypcoictinia*, Kaup (type *Buteo melanosternon*, Gould), of Australia.

<sup>2</sup> The synonymy of this subgenus is as follows:—

*Buteo*, Cuvier, Leç. Anat. Comp. I., tabl. Ois. 1800 (type, *Fulco buteo*, Linn., = *B. vulgaris*, Leach).

*Butaquila*, Hodgs., Gray's Zool. Misc. 1844, 81 (type, *Falco ferox*, Gm.).

*Buteola*, Bonap., Comp. Rend. XLI., 1855, 651 (type, *Buteo brachyura*, Vieill.).

*Pterolestes*, Sund., Disp. Ac. Hemeroharp., 1874, 23 (types, *Fulco jakal*, Daud., and *Buteo augur*, Rupp.).

*B. (Craxirex) swainsoni* has been usually regarded as the American analogue of the *B. vulgaris*, of Europe; but *B. lineatus* is, in reality, the nearest New World relative of the latter, agreeing very closely in size, proportions, and details of structure, though very different in color. *B. borealis* is also strictly congeneric with these two typical species.

and *C. pennsylvanicus* (Wils.), except in the southern portion; but Middle and South America have in addition to these (which are there winter migrants from the north), *C. albicaudatus* (Vieill.), *C. erythronotus* (King), *C. poliosomus* (Quoy and Gaim.), and *C. galapagoensis*, Gould.

Among the species composing the subgenus *Craxirex* there is considerable variation in proportions and size, though nothing of greater than specific importance, since no two are exactly alike in the details of form. *C. swainsoni* and *C. albicaudatus* have very long wings, reaching nearly to the end of the tail; but the latter has a conspicuously longer and thicker tarsus than the former; *C. erythronotus* agrees wonderfully with *C. albicaudatus* in its colors and changes of plumage, but in form it is intermediate between that species and *C. poliosomus*. On the other hand, there is quite a contrast between the great *C. galapagoensis* and the little *C. pennsylvanicus*: still, in the subgeneric character of only three primaries emarginated, even tail, etc., they all strictly agree. Several names have been invented to designate these variations of form, but they are not admissible. The synonymy of the subgenus stands as follows:—

*Craxirex*, Gould, Darwin's Voyage of the Beagle, Birds, 1841, 22 (type, *Polyborus galapagoensis*, Gould).

*Tachytriorchis*, Kaup, Classif. Säug. Vog., 1844, 143 (type, *Falco pterocles*, Temm., = *Buteo albicaudatus*, Vieill.).

*Pæcilopternis*, Kaup, Isis, 1847, 329 (type, *Falco pennsylvanicus*, Wilson).

Authors have been exceedingly inconsistent in regard to the classification of the American *Buteones*. Thus, one of our latest and best authorities, Mr. Sharpe,<sup>1</sup> places *C. albicaudatus* and *Buteo abbreviatus* together in the so-called genus "*Tachytriorchis*" (= *Craxirex*, Syn.), composed, according to his arrangement, solely of these two species. The latter of these, however, belongs to the group having four primaries emarginated, and is, consequently, and for other reasons, a true *Buteo*. The incongruity of arrangement is still further increased by the placing of *C. galapagoensis*, *C. poliosomus*, *C. erythronotus*, *C. albicaudatus*, *C. swainsoni*, and *C. pennsylvanicus* in the genus *Buteo* (as separated from "*Tachytriorchis*"), and scattered among species of no

<sup>1</sup> Catalogue of the Accipitres, or Diurnal Birds of Prey, in the collection of the British Museum. By R. Bowdler Sharpe, London, 1874.

near affinity, while *Heteraëtus melanoleucus* (Vieill.) heads the list! Messrs. Selater & Salvin, in their "Nomenclator Avium Neotropicalium"<sup>1</sup> (pp. 118-119), include all the species of *Buteo* and *Craxirex* in the genus *Buteo*, with the exception of *B. brachyura*, which is assigned to the special genus "*Buteola*," a procedure which is entirely unwarranted by the characters of the bird. Mr. Gray, in his "Hand List of Birds"<sup>2</sup> (I., pp. 6-9), makes the distinction between the subgenus *Buteo* (as he restricts it) and its allies strictly a geographical one, no true *Buteo* belonging, according to his classification, to the American continent. The subgenus *Craxirex* is made to include, besides the appropriate species, *Buteo borealis*, *B. lineatus*, *B. cooperi*, and *Antenor uncinatus*! The subgenus "*Tachytriorchis*" contains *B. leucops* (= *C. galapagoensis*, juv.), *B. abbreviatus* (given in the list as "63 *albonotatus*" and "65 *zonocercus*"), besides *B. "pterocles"* (= *albicaudatus*), *B. erythronotus*, and *B. poliosomus*, which are true *Craxireces*.

Having thus explained the proper limits of the subgenus *Craxirex*, I now present a synopsis of the species, briefly showing the distinguishing characters of each.

#### *Synopsis of Species.*

- A.—Wing very long, the tips of the primaries reaching nearly or quite to the end of the tail. Tail of young crossed by very numerous (eleven to seventeen) very narrow and indistinct bars of dusky. Size, large (wing more than 12.00 inches).
- a. Tail of adult grayish-brown, tipped with fulvous, and crossed with thirteen bars of blackish.
1. *C. galapagoensis*. Bill very large, much elongated, with its horizontal outlines nearly parallel. Adult. Sooty-black, the primaries glossed with ashy and barred with blackish-brown, and the lining of the wing tinged with rufous. Wing, 15.15-17.30; tail, 9.20-11.00; culmen, 1.25; tarsus, 2.65-3.35; middle toe, 2.10. *Hab.* Galapagos Islands.
- b. Tail of adult white, crossed by narrow lines of slate-gray and with a very broad subterminal band of slate-black.
2. *C. poliosomus*. Bill smaller, less elongated, and with the upper outline more ascending basally. Adult. Bluish-slate; lores whitish; tail-coverts white, barred and mottled with

<sup>1</sup> London, 1873.

<sup>2</sup> London, 1869.

slate; secondaries slate-gray, tipped with white. Wing, 15.00-18.10; tail, 9.00-10.50; culmen, 1.00; tarsus, 3.25-3.55; middle toe, 1.50-1.90. *Hab.* Chile, Patagonia, Tierra del Fuego, and Falkland Islands.

3. *C. erythronotus*. Adult. Above plumbeous, below white. ♂. Above entirely uniform plumbeous. ♀. Back and scapulars bright rufous. Wing, 14.25-18.50; tail, 7.30-10.00; culmen, .80-.100; tarsus, 2.95-3.50; middle toe, 1.30-1.50. *Hab.* From Peru southward along the Pacific slope of South America to the Falkland Islands.

4. *C. albicaudatus*. Adult. Above dark plumbeous; rump and lower parts white; throat, plumbeous-black. ♂. Lesser wing-coverts with a very restricted patch of rufous along the anterior edge; longer scapulars, distinctly tinged with rufous. ♀. Rufous patch on lesser coverts extended over nearly the whole area of the region; longer scapulars scarcely tinged with rufous. Wing, 14.50-18.50; tail, 5.50-10.50; culmen, .95-1.05; tarsus, 3.30-3.70; middle toe, 1.55-1.80. *Hab.* Eastern South America, from Paraguay to Columbia; both sides of Middle America, from Panama northward to Colima, City of Mexico, and Mirador.

c. Tail grayish-brown, sometimes with a hoary cast, crossed by about nine or ten very indistinct narrow bars of dusky.

5. *C. swainsoni*. Above nearly uniform dusky-brown; beneath sometimes wholly uniform dark chocolate-brown, or sooty-brown, but usually with a white throat patch, a uniform brown (♀) or rufous (♂) pectoral area, behind which the ground color is lighter, usually with transverse bars or spots of darker shades of brown or rufous. Wing, 12.00-17.25; tail, 8.00-9.80; culmen, .80-.95; tarsus, 2.30-2.90; middle toe, 1.40-1.70. *Hab.* North America, except the eastern forest district; in winter migrating southward through Middle and South America as far as Patagonia.

B.—Wing short, the tips of the primaries reaching only to the middle of the tail. Tail of young crossed by only five to seven wide bars of dusky. Size small (wing less than 12.00 inches).

d. Tail of adult black, crossed by two to four wide bands of light brownish-gray or brownish-white (the last broadest) and narrowly tipped with white.

6. *C. pennsylvanicus*. Adult. Above nearly uniform dusky-brown, darker on the back; below dull rufous-brown, much broken, especially posteriorly, by transverse spotting of white. Wing, 9.85–11.40; tail, 6.50–8.00; culmen, .70–.78; tarsus, 2.15–2.80; middle toe, 1.20–1.40. *Hab.* Eastern Province of North America, and Cuba; in winter migrating southward through West Indies and eastern Middle America to upper Amazonia and Columbia.

1. *Buteo (Crazirex) galapagoensis*.

*Polyborus galapagoensis*, Gould, P. Z. S. 1837, 9.—*Crazirex galapagoensis*, Gould, Zoöl. Beagle, pt. 3, 1841, 23, pl. 2. Gray, Gen. 2; ed. 2, 3; List Gen. and Subg. Brit. Mus. 2. Bonap. Consp. 1850, 34.—*Buteo galapagoensis*, Gray, List B. Brit. Mus. 1844, 18; Gen. fol. 1849, 12, sp. 12; Hand List, I. 1869, 7.—Strickl. Orn. Syn. I. 31.—Sund. P. Z. S. 1871, 125, 127. Sci. & Salv. Nom. Neotrop. 1873, 119. Sharpe, Cat. Ac. B. M. 1874, 170. *Dromolestes galapagoensis*, Sund. Disp. Acc. Hemeroharp. 1874, 27.—*Buteo leucops*, Gray, Cat. Acc. 1848, 36; Weigm. Arch. XVI. 1850. Bonap. Consp. 1850, 17.—*Pæcilopternis infulatus*, Kaup. Contr. Orn. 1850, 76.

*Habitat.*—Galapagos Islands, only.

*Description.*—“Adult male (type of species): Everywhere sooty black, with a brownish shade, especially distinct on the wing-coverts; quills black, the secondaries browner, and tipped with buffy white, the primaries externally shaded with ashy, all barred with blackish-brown, more distinctly below, where the interspaces are dull ashy-white; tail grayish-brown, tipped with fulvous, and crossed with thirteen blackish bars, the subterminal one slightly the broadest; under surface of the body sooty black, with a clearer shade of brown, more distinct on the under wing-coverts, which are also tinged with rufous. Total length 20.50 inches, culmen, 1.7; wing, 15.15; tail, 9.2; tarsus, 2.85.” (Sharpe, l. c.)

Young (specimens in the Museum of the Academy of Natural Sciences of Philadelphia): (1) Tail brownish-gray, fading narrowly into whitish at the tip, and crossed by about eleven narrow, rather distinct, bands of black. Prevailing color blackish-brown, the head, neck, and lower parts variegated with pale ochraceous, chiefly in the form of a basal spotting, most exposed on the head, neck, and breast. Tail coverts barred transversely with ochraceous-white. Wing, 16.80; tail, 10.70; culmen, 1.25; tarsus, 2.65; middle toe, 2.10. Fourth quill longest; first shorter than seventh. (2) Tail brownish-gray, with a hoary cast, faintly whitish at the tip, and

crossed by more than eleven narrow and very indistinct bands of dusky; inner webs reddish-white. Prevailing color above brownish-black, with a purplish cast; head, neck, and lower parts ochraceous-white. Dorsal region and wing-coverts much variegated longitudinally with deep ochraceous; head and neck streaked with black; lower parts spotted with dark purplish-brown; tibiæ with sparse, longitudinally-sagittate, markings of the same. Tail-coverts (upper and lower) very distinctly barred transversely.

2. *Buteo (Craxirex) poliosomus*.

*Falco polyosoma*, Quoy. & Gaim. Voy. Uran. Ois. 1824, 92, pl. 14.—*Astur polyosoma*, Cuv. Reg. An. I. 1829, 332.—*Buteo poliosoma*, Less. Traité, 1831, 82. Strickl. Orn. Syn. I. 1855, 219. *Sci. P. Z. S.* 1860, 384. Abbott, *Ibis*. 1861, 151. *Sci. & Salv. Nom. Neotrop.* 1873, 119.—*Buteo poliosoma*, Sharpe, *Cat. Acc. B. M.* 1874, 171.—? *Buteo ventralis*, Gould, *P. Z. S.* 1837, 10. Darwin, *Zoöl. Beag.* pl. 3, 27. Gray, *Gen. (sub. borealis) sp. 6.* Bonap. *Consp.* 19. Strickl. *Orn. Syn. I.* 31. Cass. *Expl. Exp. Orn.* 1858, 94, pl. 3, fig. 2 (♀ jus.?) *Buteo varius*, Gould, *P. Z. S.* 1837, 10 Darw., *Zool. Beag.* 1841, 26. Cass. *Expl. Exp. Orn.* 1858, 92, pl. 3, f. 1 (♂ jus.). Peale, *Expl. Exp. Orn.* 61. ?*Sci. P. Z. S.* 1860, 384.

*Habitat.*—Chili, Patagonia, Tierra del Fuego, and Falkland Islands.

*Description.*—*Adult.* “Bluish slate-color above and below, a little clearer about the head and throat; lores whitish; upper and under tail-coverts white, with slaty-gray cross bars and mottlings of the same color; tail white crossed with about nine narrow bands of slaty-gray, and a very broad subterminal band of slaty-black; primaries black, externally shaded with silvery-gray, the secondaries entirely slaty-gray like the back, tipped with white; primaries white at base of inner web, with remains of dusky slate-colored bars. Total length 22 inches; culmen, 1.4; wing, 15.25; tail, 8.5; tarsus, 3.4.” (Sharpe, l. c.)

“Female (? in changing plumage): All over blackish slate-color, excepting the hinder neck, the entire mantle and upper scapulars, the centre of the breast, extending on to the chest and centre of the abdomen, all these rufous portions of the body more or less obscured with slate-color; quills black, silvery-gray near the base, barred with black; inner face of quills ashy-white, with a few dusky crossbars; lower back, rump, and upper tail-coverts ashy, the former slightly washed with rufous; tail ashy-white, with about nine narrow bars and a broad subterminal band of slate-

color, less distinct below. Total length 22.5 inches, culmen 1.75, wing 15, tail 9, tarsus 3.50." (Sharpe, l. c.)

*Young* (from specimens in the United States National Museum): Tail brownish-gray, with more or less of a hoary cast, usually passing into grayish-white at the tip, and crossed by very numerous (more than fifteen) narrow, rather indistinct, somewhat oblique, bars of dusky—becoming gradually obsolete basally, and very oblique on the inner webs. Upper parts blackish-brown, variegated with deep ochraceous, especially on the wing-coverts, scapulars, and upper tail-coverts; head streaked with the same; secondaries and primaries obscurely banded with dusky and fading into paler at tips. Lower parts ochraceous, the jugulum, breast, and sides longitudinally striped with blackish; sides tinged with rusty; tibiae and crissum transversely spotted, or barred, with rufous; a more thickly spotted belt across the abdomen and flanks. Inner webs of primaries pure white anterior to their emargination, and immaculate, or very faintly barred. Wing, 15.50–18.10; tail, 9.30–10.50; culmen, 1.00; tarsus, 3.25–3.55; middle toe, 1.50–1.90.

*Remarks.*—We are inclined to regard the plumage described by Mr. Sharpe as the female in changing plumage, as being in reality the adult female in full dress. A specimen in the U. S. National Museum corresponds quite closely except that it is still more rufous, and has the tail as in the young plumage (described above) with the exception of a single feather of the new moult. This specimen (No. 68,369, Nat. Mus., Chile?), which is unmistakably in transition plumage, may be described as follows: Tail dull gray, with a perceptible hoary wash, crossed by an indistinct subterminal band (about .50 wide), and by very numerous (more than fifteen) narrow bars of darker; these bars most distinct on the inner webs, which are white to a greater or less distance from their inner edge; shafts pure white, except terminally; remiges dull slaty, with a hoary cast, paler (not white) at tips, and crossed by numerous, distinct, narrow bands of blackish; wing-coverts more dusky, and more or less variegated with rusty. General color of the plumage rusty chestnut, much broken by lighter (ochraceous) and darker (brownish-black) spotting and barring—the former color mostly marginal or terminal, the latter central on the feathers; the chestnut is deepest and most uniform on the back, lesser wing-coverts, and abdomen; the ochraceous prevails across the breast, while on the scapulars the black transverse bars pre-

dominate; on the head the predominant color is black, the feathers being merely edged laterally with rufous; on the cheeks the black is nearly uniform. Lining of the wing rich chestnut—the rufous broken by darker and lighter spotting; inner webs of primaries ash-gray, with indistinct, very narrow, deeper-gray, oblique bars.<sup>1</sup>

The tail-feather (middle one) of the new moult, completely grown, is colored as follows: The prevailing color is silvery-gray, but this changes gradually to white along the shaft, but toward the end this gives way to a subterminal band of deep black, about one inch wide, and distant half an inch from the end; the remainder, or gray portion of the feather, is crossed by about twelve narrow, zigzag bars of deeper gray, these becoming gradually more indistinct basally, where they are broken into a confused mottling.

A young male, supposed to be from Chile (No. 1624, Museum of the Wesleyan University, Middletown, Connecticut) is colored as follows: Tail dull brownish-gray to the tip, crossed by numerous (more than fifteen) narrow bars of dusky; remiges dull brownish-slate, distinctly banded with bars of dusky black; rest of upper parts nearly uniform blackish-brown, slightly variegated (more heavily on upper tail-coverts) with ochraceous. Head blackish-brown, faintly edged with ochraceous, with a large, plain, ochraceous area on the auricular region. Lower parts (except throat) ochraceous-white, with sharply-defined, broad, longitudinal stripes of blackish-brown; tibiae with irregular hastate spots of rufous; crissum with sparser, finer markings of the same. Lining of the wing ochraceous-white, with large but not crowded spots of brownish-black; inner webs of primaries white, marbled along the edge with slate.

*Material examined.*—U. S. National Museum, Washington, 4.

### 3. *Buteo (Craxirex) erythronotus*.

*Haliaëtus erythronotus*, King, Zoöl. J. III., 1827, 424; Voy. Beag. I., 532.

—*Buteo erythronotus*, Darwin, Zool. Beag. 1841, 26. Gray, Gen. fol. sp. 9; List B. Brit. Mus. 35. Hand List, I., 1869, 8. Bridg., P. Z. S. pt. 11, 109; Ann. N. H. XIII., 499. Jard., Edin. Phil. J., n. s. II., 117. Strickl. Orn. Syn. I. 1855, 34. ScI. P. Z. S. 1860, 384; Ibis, 1860, 25, pl. 1, f. 3. Abbot, Ibis, 1861, 151. ScI. and Salv., Nom.

<sup>1</sup> This is the character of the quills of the new moult; several old ones, which were not cast, are pure white instead of ash, the bars of the same shade as in the new feathers.

Neot. 1873, 119. Sharpe, Cat. Acc. B. M. 1874, 172.—*Tachytriorchis erythronotus*, Bonap., consp. 17.—*Pecilopternis erythronotus*, Kaup, Contr. Orn. 1850, 76. Bonap. Consp. I., 1850, 17.—*Aquila braccata*, Meyen, Beitr. 1834, 65.—*Buteo braccatus*, Pelz. Verh. z.-b. Wien, 1862, 12.—*Buteo tricolor*, D'Orb. et Lafr. Syn. Av. 1838, 6. D'Orb. Voy. Am. Merid. 1840, 69, 106, pl. 30.—*Buteo unicolor*, D'Orb. et Lafr. l. c. p. 7.—*Hypomorphnus leucurus*, Lafr. R. Z. 1849, 338.—*Buteo polyosoma*, Schl. Mus. P.-B. Buteones 1862, 12; Rev. Acc. 1873, 109 (not of Quoy and Gaim!).

*Habitat*.—Pacific slope of South America, from Peru to Falkland Islands; Chile; Patagonia, on both coasts, up to 40°.

*Diagnosis*.—Dimensions. Wing, 14.25–16.30; tail, 7.30–9.00; culmen, .83–1.00; tarsus, 2.95–3.50; middle toe, 1.30–1.50. Form: Third or fourth quill longest; first intermediate between eighth and ninth. Tail even in the adult, slightly rounded in the young. Color: Adult, tail pure white (the lateral feathers scarcely tinged with ash), crossed near the end by a subterminal band of uniform black about 1.00 wide; the white portion crossed by fine lines or narrow bars of plumbeous. Above, including the rump, and sides of the neck, mostly or wholly uniform plumbeous; throat, cheeks, and rest of lower parts pure white, the sides (always), frequently the abdomen and usually the tibiae more or less barred with plumbeous. ♂. Upper parts entirely uniform plumbeous, without any rufous. ♀. Back and scapulars uniform bright rufous. Young. Tail hoary ash, uniform, or growing gradually paler basally, with a narrow dusky subterminal band, and narrowly barred to the base with dusky, these bars sometimes nearly obsolete or broken into an irregular mottling. Above blackish-brown, much variegated, especially on the wing-coverts, scapulars and upper tail-coverts, with ochraceous or rufous. Lower parts ochraceous or ochraceous-white, the middle of the breast usually immaculate, but the sides of the breast, the sides and the abdomen marked with broad transverse bars of rusty or longitudinally cuneate spots of brownish-black; the breast sometimes with narrow streaks of the same; tibiae and crissum with narrower rusty bars, or hastate spots.

*Remarks*.—In the adult there is sometimes an entire absence of bars on the white portion of the tail. One adult female has a few rufous feathers on the sides of the breast.

A young male is marked as follows:—

Tail hoary ash, narrowly barred to the base with darker, and

with a narrow subterminal dusky band. Upper parts blackish-brown, much variegated, especially on the wing-coverts, scapulars, and upper tail-coverts, with reddish-ochraceous or rufous. Lower parts deep ochraceous, the sides of the breast, sides, and abdomen, with large, longitudinal, cuneate spots of brownish-black; middle of the breast with narrow lines of the same; tibiæ and crissum with large hastate spots of rusty. Young ♀. Tail whitish-ash, becoming paler basally, mottled with darker and with a badly defined subterminal band of dusky. Entire back and scapulars plain bright rufous, and the wing-coverts, rump, upper tail-coverts, and head and neck, much tinged with the same.

A young female in Mr. Lawrence's collection differs only in the coloration of the lower parts, the ground-color of which is ochraceous-white; the pectoral area is immaculate; the abdomen, sides, flanks, tibiæ, and crissum are barred with rusty—the bars narrower on the tibiæ, and more distant on the crissum; there is a distinct rictal "moustache" of black.

*Material examined.*—U. S. National Museum, 7; Mus. Academy of Natural Sciences of Philadelphia, 4; Mus. Comparative Zoology, Cambridge, 2; Mus. Boston Society of Natural History, 3; Mus. G. N. Lawrence, Esq., 1. Total number of specimens examined, 16.

*Measurements.*

Sex.	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.	Specimens.
♂	14.25—14.75	8.00—8.30	.80—.85	3.10—3.20	1.30—1.50	8.
♀	14.70—16.30	7.30—8.90	.80—1.00	2.95—3.50	1.40—1.50	5.

4. *Buteo (Craxirex) albicaudatus.*

*Aquila coliblanca* Azara, Apunt. I. 1802, 69.—*Buteo albicaudatus*, Vieill., N. D. IV. 1816, 477. Pucher. Rev. et Mag. 1850, 87. Strickl. Orn. Syn. I., 1855, 35.—*Tachytriorchis albicaudatus*, Sharpe, Cat. Acc. B. M. 1874, 162.—*Spizaëtus leucurus*, Vieill., N. D. XXXII. 1819, 59.—*Buteo leucurus*, Lafr., R. Z. 1849, 100.—*Fulco pterocles*, Temm., Pl. Col. I., 1823, pls. 56 (adult), and 139 (young).—*Buteo pterocles*, Less., Man. I., 1828, 103. Gray, Gen. I., 1849, 12; Hand List, I., 1869, 8. Caban. Schom. Reise in B. Gui. III., 1848, 739. Burm. Th. Bras. II. 1855, 49. Schl. Mus. P.-B., Buteones, 1863, 13; Rev. Acc. 1873, 110. Pelz. Orn. Bras., 1871, 3, 396. Sc. and Salv. Nom. Neot., 1873, 119.—*Tachytriorchis pterocles*, Kaup, Class. Säug. Vög.,

1844, 123; Contr. Orn. 1850, 75. Bon. Consp. I., 1850, 17.—*Buteo albicauda*, Less, Traité, 1831, 81, pl. 15. Pucheran, R. et M. Zool. 1850, 214.—*Buteo tricolor*, Hartl., Ind. Azara, 1841, 1 (not of D'Orb.).

*Habitat*.—The whole of Middle America, north to Mirador (on the eastern side), Colima (west coast) and the City of Mexico (central plateau); eastern South America as far as Paraguay.

*Diagnosis*.—Wing, 14.50–18.00; tail, 7.70–10.50; culmen, .95–1.05; tarsus, 3.30–3.70; middle toe, 1.55–1.80. Form: Third quill longest; first intermediate between sixth and eighth. Tail even in adult, slightly rounded in young. Color: Adult, tail white (the lateral feathers much tinged with ash), crossed by a broad subterminal band of black; the white portion crossed by faint lines or narrow bars of plumbeous. Above dark plumbeous; rump and lower parts pure white; throat plumbeous-black, or bluish-plumbeous. Flanks, rump, and lining of the wing usually faintly barred with ashy, dusky, or rufous. ♂: Lesser wing-coverts with a restricted patch of rufous on the anterior portion; longer scapulars strongly tinged with rufous. ♀: Rufous patch on lesser wing-covert region extended over nearly the whole of its area; longer scapulars scarcely tinged with rufous. Young: Tail hoary grayish (the inner webs mostly white), growing gradually darker terminally, and passing narrowly into dull whitish or rufous at tip; crossed with numerous narrow and very obscure bars of darker, these growing gradually obsolete towards the base.<sup>1</sup> General color brownish-black, the lower parts more or less variegated (most conspicuously on the posterior portions, and on middle of the breast) with ochraceous or whitish.

*Remarks*.—The identity of specimens of the two plumages described in the diagnosis as “adult” and “young” is proven by specimens in which part of the tail feathers are of one plumage and part of the other. Such a specimen is in Mr. Lawrence's collection from the city of Mexico.

The older individuals in the immature dress are colored as follows: Tail hoary ash, growing darker terminally, and passing narrowly into brownish-white at the tip—the inner webs mostly white; the terminal half with just discernible obscure bars of darker, these becoming gradually obsolete on the basal half; sometimes they are entirely obsolete for the full length of the outer webs. Upper tail-coverts pure white, usually immaculate,

<sup>1</sup> These bars are sometimes entirely obsolete on the outer webs.

but sometimes barred; inner webs of primaries ashy, the two or three outer ones more whitish, and sometimes barred with dusky. In males, the middle of the breast, the tibiae and crissum, are usually ochraceous irregularly spotted with brownish-black.

The darker-colored individuals in this stage are distinguishable from the dark examples of the young of *C. swainsoni* only by the very much stouter and longer tarsi.

The adults vary but little. The white of the jugulum usually reaches forward medially into the plumbeous of the throat, and in one (♂ ad. Tehuantepec, Mexico; Sumichrast) it extends—interruptedly, however—to the chin. Another male from the same locality has the scapulars almost entirely rufous, with black shaft-streaks. The white of the lower parts in the adult is of a pureness and continuity strikingly characteristic of this species.

A very young specimen from Paraguay has the tail more brownish, more distinctly barred, and more ochraceous on the tip; the upper tail-coverts are ochraceous marked with broad crescentic bars of blackish, and the upper parts generally are variegated with ochraceous.

*Material examined.*—U. S. National Museum, 12; Museum of the Academy of Natural Sciences of Philadelphia, 6; Museum of G. N. Lawrence, Esq., 1; other specimens,<sup>1</sup> 4. Total number of specimens examined, 23.

*Measurements.*

Sex and age.	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.	Specimens.
♂ ad.	16.30—16.70	7.50—9.00	.95—1.10	3.30—3.55	1.60—1.80	5
♂ juv.	14.50—16.75	8.60—8.75	1.02—....	3.30—3.60	1.55—1.65	3
♀ ad.	17.75—.....	8.25—....	1.00—....	3.60—....	1.75—....	1
♀ juv.	17.00—17.75	8.40—10.30	.95—1.05	3.30—3.70	1.60—1.80	3

5. *Buteo (Crazirex) Swainsoni.*

? ? ? *Buteo cinereus*, Vieill., Ois. Am. Sept. 1807.—“*Buteo vulgaris*,” Swains. & Rich., F. B. A. II., 1831, 41, pl. 27 (adult). Jard. (ed. Wils.), Am. Orn., II., 1838, 56. Brewer (ed. Wils.), Am. Orn., 303. Synop., 1852, 684.—*Buteo swainsoni*, Bonap., Comp. List., 1838, 3;

<sup>1</sup> These are specimens collected on the Isthmus of Tehuantepec, by Professor F. Sumichrast, and not entered in the Register of the National Museum.

Consp., 1850, 19; Pr. Ac. Nat. Sc. Phil., 1855, 280. Heerm., Pac. R. R. Rep., II., 1855, 32. Cassin, Pr. A. N. S. Phil., 1855, 280; B. Cal., Tex., etc., 1855, 98; B. N. Am., 1858, 19, pl. XIII. Strickl., Orn. Syn., I., 1855, 30. Gamb., Jour. Ac. N. Sci. Phil., 18—, I., 27. Blakist., Ibis, 1861, 317 (eggs). Pelz. Verh. z.-b. Wien, 1862, 150. Dresser, Ibis, 1865, 324 (Texas). Coues, Prod., 1866, 9; Key, 1872, 217; Am. Nat., 1874 (habits). Gray, Hand List, I., 1869, 7. Coop., B. Cal., 1870, 476. Ridgw., Pr. Ac. Nat. Sci. Phila., 1870, 142; B. B. & R., Hist. N. Am. B., III., 1874, 263; Pr. Boston Soc. N. H., May, 1873, 27. Sci. & Salv., Nom. Neotr., 1873, 119.—*Buteo montanus*, Nutt., Man. I., 1840, 112.—*Buteo bairdii*, Hoy, Pr. Ac. Nat. Sci. Philad., 1853, 451 (young). Cassin, B. Cal., Tex., etc., 1854, pl. XLI.; B. N. Am., 1858, 21. Strickl., Orn. Syn., I., 1855, 37. Gray, Hand List, I., 1869, 8.—*Buteo insignatus*, Cass., B. Cal., Tex., etc., 1854, 102, pl. XXXI. (melanistic phase); B. N. Am., 1858, 23. Heerm., Pac. R. R. Rep., VII., 1857, 31. Strickl., Orn. Syn., I., 1855, 38. Sci., P. Z. S., 1856, 285. Coues, Pr. Ac. Nat. Sci. Philad., 1866, 45. Bryant, Pr. Boston Soc. N. H., X., 1865, 90. Sci., Ibis, I., 216 (Guatemala). Gray, Hand List, I., 1869, 8. Cooper, Orn. Cal., I., 1870, 474.—*Buteola insignata*, Bonap., Comp. Rend., XLII., 1856, 956.—*Buteo oxypterus*, Cass., Pr. Ac. Nat. Sc., VII., 1855, 282 (young); B. N. Am., 1858, 30, pl. 15, fig. 2. Strickl., Orn. Syn., I., 1855, 28. Coues, Pr. Ac. Nat. Sci. Philad., 1866, 45; Key, 1872, 218. Gray, Hand List, I., 1869, 8. Cooper, Orn. Cal., I., 1870, 480.—*Buteo swainsoni* var. *oxypterus*, Ridgw., B. B. & R. Hist. N. Am. B., III., 1874, 266.—*Buteo fuliginosus*, Sci., Pr. Zool. Soc., Lond., 1858, 356; Trans. Zool. Soc., 1858, 267, pl. LXII. (♂ ad., melanistic phase). Cass., B. N. Am., 1858, pl. 15, fig. 1. Salv., Ibis, 1860, 401. Gray, Hand List, I., 1869, 7. Ridgw., Pr. Ac. Nat. Sci. Philad., Dec. 1870, 142.—*Buteo gutturalis*, Max., Caban. Journ., VI., 1858, 17 (eggs).—“*Buteo harlani*, Aud.” Bryant, Pr. Boston Soc. N. H. VIII., 1862, 115.—“*Buteo albonotatus*, Kaup,” Lawr. Ann. N. Y. Lyc. IX., April, 1868, 133 (nec Kaup).—“*Buteo albicaudatus*, Vieill.,” Sci., P. Z. S., 1869, 634, No. 22 (Buenos Ayres).—*Buteo obsoletus*, Sharpe, Cat. Acc. Brit. Med., 1874, 184 (nec *Fulco obsoletus*, Gm., 1788!).

*Habitat.*—Found chiefly in the Western Province of North America, where it is a very abundant species, but an occasional visitant to portions of the Eastern Province (chiefly north of the Great Lakes and the St. Lawrence River), and straggling into South America, as far as Patagonia. All portions of the Western Province of North America, from Mazatlan, Mexico, to the Yukon in Alaska, and from the Pacific coast eastward to the eastern base of the Rocky Mountains (National Museum); interior of British America north to the fifty-seventh parallel (Swainson & Richard-

son); Canada and Wisconsin (Museum Philadelphia Academy); Massachusetts (Museum Wm. Brewster); Illinois (Ridgway); Arkansas, Mazatlan, Costa Rica, and Argentine Republic (National Museum); Guatemala (Sclater); Patagonia (Sharpe); Masafuera (Salvin, *in epist.*).

*Diagnosis.*—Dimensions: Length, 19.00–22.00; extent, 48.00–56; wing, 12.00–17.25; tail, 8.00–9.80; Culmen, .80–.95; tarsus, 2.30–2.90; middle toe, 1.40–1.70.<sup>1</sup> Weight,  $1\frac{1}{2}$ – $3\frac{1}{2}$  lbs. Form:

<sup>1</sup> These figures are based upon the following measurements made by the author:—

I. Measurements of prepared specimens. Museums.

Sex and age.	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.	Examples.
♂ ad.	14.40–16.00	8.00–9.00	.80–.90	2.30–2.75	1.40–1.60	17
♀ ad.	14.75–17.25	9.00–9.80	.80–.95	2.50–2.90	1.50–1.65	20
♂ juv.	14.80–15.10	8.50–9.00	.80–.90	2.60–2.80	1.45–1.65	5
♀ juv.	15.30–16.20	8.70–9.60	.80–.90	2.65–2.75	1.50–1.70	5

II. Measurements of fresh specimens in the field (in connection with the duties of the Zoologist of the United States Geological Exploration of the Fortieth Parallel, Clarence King, Esq., United States Geologist, in charge). These measurements require explanation in order that they may be understood. They come in the same sequence in each instance, as follows: (1) Total length, from the point of the bill to the end of the tail; (2), widest expanse of the wings, from tip to tip; (3), length of the wing from the carpal joint to the point of the longest primary; (4), length of the wing from the metacarpo-phalangeal joint; (5), length of the culmen along the chord of the arch; (6), length of the tarsus in front; (7), length of the middle toe to the base of the claw; (8), length of the tail from the base of the coccyx; (9), length of the tail from the end of the upper coverts.

*a. Summaries of field notes.*—♂, ad. (Four specimens, Nevada and Utah, coll. U. S. Geol. Expl. 40 Par.):  $19\frac{1}{2}$ –20; 48–50 $\frac{1}{4}$ ;  $12\frac{7}{8}$ ;  $1\frac{5}{16}$ ;  $1\frac{5}{8}$ ;  $7\frac{3}{4}$ ;  $4\frac{1}{2}$ ; weight  $1\frac{1}{2}$ – $2\frac{1}{4}$  lbs. Upper mand. deep black, scarcely bluish basally; lower black with basal  $\frac{1}{2}$  light blue; cere and rictus greenish gamboge, or dull light lemon-yellow; eyebrow olivaceous; iris deep hazel, or burnt-sienna—sometimes yellowish on upper portion; tarsi and toes deep light chrome-yellow; claws black.

♀, ad. (Eight specimens, Nevada and Utah, coll. U. S. Geol. Expl. 40 Par.): 21–22;  $50\frac{1}{2}$ –56;  $16\frac{1}{2}$ –17;  $13\frac{1}{2}$ –14; 1; 2;  $8\frac{5}{8}$ ; 5; weight  $2\frac{1}{4}$ – $3\frac{1}{2}$  lbs. Bill slate-black, becoming light slate-blue basally; cere and rictus light gamboge, sometimes tinged with greenish; eyebrow olivaceous-yellow; iris deep hazel; tarsi and toes deep chrome-yellow; claws black.

Only three outer primaries with inner webs emarginated: third or fourth (usually the third) quill longest; first shorter than the

♂, juv. (Two specimens, W. Nevada, coll. U. S. Geol. Expl. 40 Par.):  $18\frac{1}{4}$ — $19\frac{3}{8}$ ;  $43\frac{3}{4}$ — $45\frac{1}{2}$ ;  $12\frac{1}{4}$ — $13\frac{3}{4}$ ;  $9\frac{3}{4}$ — $10\frac{3}{4}$ ;  $\frac{2}{3}$ ;  $1\frac{1}{2}$ ;  $6\frac{3}{4}$ —7;  $3\frac{3}{4}$ — $4\frac{1}{8}$ . Bill dull black, becoming pale blue towards rictus, and on basal half of lower mandible; cere and rictus yellowish-green: iris cinereous, with brownish outer wash; tarsi and toes pale ashy-green; claws dull slate-black. Weight  $1\frac{2}{8}$ — $1\frac{1}{2}$  lbs.

♀, juv. (Three specimens, W. Nevada and Utah, coll. U. S. Geol. Expl. 40 Par.):  $16\frac{1}{2}$ —21;  $45$ — $50\frac{3}{4}$ ; 13—14;  $10\frac{1}{8}$ —11;  $1\frac{5}{8}$ —1;  $1\frac{5}{8}$ — $1\frac{3}{4}$ ;  $6\frac{3}{8}$ — $7\frac{1}{2}$ ; 3— $3\frac{3}{4}$ ; weight 2 lbs. Iris as above, or yellowish-brown; feet as above (youngest specimens) or light chrome-yellow (older).

*b. Notes on individuals.*—109, ♀, juv. Big Bend of the Truckee (Camp 12), Nevada, July 26, 1867.  $16\frac{1}{2}$ —45—13— $10\frac{1}{8}$ —1— $1\frac{5}{8}$ — $6\frac{7}{8}$ —3. Bill dull black, inclining to pale blue on the rictus and on the basal half of the lower mandible; cere pale yellowish-green; iris cinereous, with a brownish outer wash; tarsi and toes very pale ashy-green.

113, ♀, ad. (Fuliginous plumage, parent of Nos. 109, 115, 116, and 117). Camp 12, July 29, 1867.  $21\frac{1}{2}$ —53—17—14—1—2— $8\frac{5}{8}$ —5. Weight  $2\frac{1}{4}$  pounds. Bill slate-black, light blue basally; cere and rictus pure light yellow; iris deep hazel; tarsi and toes light chrome-yellow; claws black.

114, ♂, ad. (Normal plumage, mate of the preceding). Camp 12, July 29, 1867.  $19\frac{3}{4}$ —48—16— $12\frac{7}{8}$ — $1\frac{5}{8}$ — $1\frac{5}{8}$ — $7\frac{3}{4}$ — $4\frac{1}{2}$ . Weight  $1\frac{1}{2}$  pounds. Cere and rictus light, dull lemon-yellow; tarsi and toes deep chrome-yellow; iris deep hazel.

115, ♀, juv. Camp 12, July 29, 1867.  $19\frac{3}{4}$ —47—14—11— $1\frac{5}{8}$ — $1\frac{3}{4}$ — $7\frac{1}{2}$ — $3\frac{3}{4}$ . Weight 2 pounds. Same remarks as to No. 109.

116, ♂, juv. Camp 12, July 29, 1867.  $19\frac{3}{8}$ — $45\frac{1}{2}$ — $13\frac{3}{4}$ — $10\frac{3}{4}$ — $2\frac{7}{8}$ — $1\frac{1}{2}$ —7— $3\frac{3}{4}$ . Weight  $1\frac{3}{8}$  pounds. Same remarks.

177, ♂, juv. Camp 12, July 29, 1867.  $18\frac{1}{4}$ — $43\frac{3}{4}$ — $12\frac{1}{4}$ — $9\frac{3}{4}$ — $2\frac{7}{8}$ — $1\frac{1}{2}$ — $6\frac{3}{4}$ — $4\frac{1}{8}$ . Weight  $1\frac{1}{2}$  pound. Same remarks.

771, ♀, ad. (Intermediate plumage, barred ochraceous belly). Truckee Reservation, May 29, 1868. (Shot from nest.)  $21\frac{1}{2}$ —52— $16\frac{1}{2}$ — $13\frac{1}{2}$ . Weight 3 pounds. Bill deep black, the upper mandible scarcely paler basally; lower, with the basal third pale blue; cere and rictus greenish-gamboge; iris burnt sienna; tarsi and toes deep gamboge, with a greenish tinge.

1072, ♀, ad. (Normal plumage, immaculate white belly). Salt Lake City, Utah, May 31, 1869. 21—53. Weight  $2\frac{1}{2}$  pounds. Bill slate-black, becoming light slate-blue basally; cere and rictus greenish-gamboge; naked eyebrow olive-yellow; iris deep fine hazel; tarsi and toes deep chrome-yellow. (Stomach filled with grasshoppers.)

1073, ♀, ad. (Normal plumage, immaculate white belly). Same locality and date.  $21\frac{1}{2}$ —53. Weight  $2\frac{1}{2}$  pounds. Same remarks.

1074, ♀, ad. (Normal plumage, immaculate white belly). Same locality and date. 22— $53\frac{1}{2}$ . Weight  $2\frac{3}{4}$  pounds. Same remarks.

sixth (usually about equal to—rarely shorter than—the seventh). Wing reaching nearly to the end of the tail; primaries exceeding secondaries by about one-third the length of the wing. Tail even. Transverse scutellæ on front of the tarsus, 9–13. Color: Tail grayish-brown, or grayish, sometimes with a hoary-cast, usually passing narrowly into whitish at the tip, and crossed by an indefinite number of very indistinct narrow bands of a darker shade. Colors of other portions extremely variable. Adult, nearly uniform dusky brown above, the frontlet, concealed bases of occipital feathers, and the upper tail-coverts more or less mixed with white; beneath sometimes pure white, with a broad patch of uniform brown or rufous on the breast, and white throat-patch, but from this light extreme the lower parts vary to uniform dusky chocolate or sooty brown, through intermediate shades of ochraceous or rufous upon which ground deeper-colored bars are visible on portions posterior to the pectoral patch; very rarely the lower parts are irregularly spotted with brown, while the pectoral patch is broken up into similar spotting by the admixture of more or less of white. In the extreme melanistic condition the bird is uniformly blackish-brown, with white bars on the crissum. Young, ochraceous and purplish-black, in relative quantities varying according to the individual; the ochraceous forms the ground

1075, ♀, ad. (Normal plumage, immaculate white belly). Same locality and date. 21½–54. Weight 2¾ pounds. Same remarks.

1291, ♂, ad. (Normal plumage). Parley's Park, Utah, June 25, 1869. 20–50. Weight 2¼ pounds. Upper mandible, deep black, scarcely bluish basally; lower, with basal third light blue; cere and rictus greenish-gamboge; iris burnt-sienna, yellowish on top; eyebrow olivaceous; tarsi and toes deep, light chrome-yellow.

1310, ♂, ad. (Normal plumage). Parley's Park, June 26, 1869. 19½–48. Same remarks.

1335, ♀, ad. (Fuliginous plumage). Parley's Park, June 28, 1869. 22–56–17. Weight 3½ pounds. Bill black, pale blue basally; cere and rictus greenish lemon-yellow; iris deep brown; tarsi and toes chrome-yellow.

1359, ♂, ad. (Normal plumage, very white below). Parley's Park, July 2, 1869. 20–50½. Same remarks.

1360, ♀ ad. (Fuliginous plumage, very black; mate of the preceding!) Parley's Park, July 2, 1869. 21–50½. Weight 2½ pounds. Same remarks.

1501, ♀, juv. Parley's Park, August 10, 1869. 21–50¾. Bill black, becoming pale blue basally; cere and rictus, fine yellowish-green; iris yellowish-brown; tarsi and toes light chrome-yellow.

color, and usually predominates, but is sometimes much less in amount than the black; the tail is the same as in the adult.

*a. Normal phase.*

Adult: Above continuous blackish-brown, the feathers usually with somewhat paler borders; outer scapulars and upper tail-coverts very rarely tinged with rufous—the latter usually more or less barred with white or ashy; occipital feathers white beneath the surface; primaries plain brownish-black, without trace of bars on outer webs. Throat and chin more or less white, usually in form of a sharply-defined patch; jugulum and breast brown, generally plain, very rarely spotted with whitish, the tint varying from rufous (♂) to the color of the upper parts (♀). Other lower parts varying from white to ochraceous (rarely almost rufous), generally more or less barred, or spotted transversely, with dark brown or rufous—very rarely immaculate; crissum usually immaculate, but sometimes with faint and distant bars. Lining of the wing white, sometimes tinged with ochraceous; often immaculate, but generally sparsely (never heavily) spotted with rufous or brown. Under surface of the primaries cinereous (the outer two or three more whitish) sometimes plain, sometimes indistinctly barred with darker.

♂. Breast-patch rufous with darker shaft-streaks.

♀. Breast-patch dark grayish-umber, or blackish-brown (like the back).

Young: Above brownish-black, with a faint purplish lustre, the feathers all paler on their borders; wing-coverts and scapulars more or less variegated with ochraceous or whitish spotting, this usually very conspicuous on the longer scapulars; upper tail-coverts ochraceous or whitish (their inner webs more brownish), barred with dusky. Tail as in the adult. Ground color of the head, neck, and lower parts, ochraceous, varying in shade from very deep cream-color to nearly white; the feathers of the head, neck, anterior part of the back, and sides of the breast with medial longitudinal tear-shaped spots of brownish-black; lower parts generally spotted, sometimes everywhere, with black, and occasionally immaculate.

*b. Melanistic phase.*

Adult: Prevailing color plain blackish-brown; the tibiae, lining of the wings, and sometimes the breast, inclining, more or less, to rufous. Crissum usually white, sometimes immaculate, generally barred with rusty or blackish; occasionally with dusky and whitish bars of equal width. No white on the throat, or else but little of it. Young: Brownish black, variegated with ochraceous spotting, in amount varying with the individual.

*Remarks.*—The above diagnosis is based upon upwards of one hundred specimens, and may be considered as covering every phase, seasonal, sexual, and individual, assumed by the species. So great is the extent of individual variation, that, taking a series of specimens of either plumage, scarcely two can be found which are alike in all their markings, especially those on the lower surface of the body.

The plumage of the upper surface, however, is so constant, that, taking ever so large a series of adults, and turning them on their bellies so that the backs of all are presented to view at once, a specimen in the least degree aberrant is very rare, while one very noticeably different can scarcely be found; and when such a one is detected, it is generally found that the difference is a seasonal, rather than an individual, one. Thus, in specimens which have just completed the new moult, some of the longer scapulars are seen to be slightly variegated with ochraceous on their edges; while in those in which the feathers have become old, these paler mottlings and edges are "worn" off, causing a very uniform shade of dark grayish-brown to prevail continuously over the upper parts, though each individual feather fades gradually in depth of color on its borders. As a rule, the brown of the upper parts is a shade lighter and more grayish in the males than in the females, and there is apt to be a slight rufous edging to the feathers of the neck, as well as a tinge of the same on the upper tail-coverts; while not unfrequently the longer scapulars have their exterior edges tinged with rufous. But these differences between the sexes are so exceedingly slight as to be appreciated only upon actual comparison of specimens, and even then do not prove sufficiently constant to be considered of any importance.

Reversing the position of the specimens, so as to present their lower surfaces to view, they can be immediately placed into two

groups, distinguished by the color of the patch on the breast. One lot has this patch clear, rather light, cinnamon-rufous; the other has it dark grayish-brown, the same color as the upper parts. Upon examining the labels, the first series is found to be composed entirely of males, while those of the second are all females.

In a series of nine normally-colored adult males, all but two have the rufous breast-patch abruptly defined posteriorly, against the white of the posterior lower parts, the outline being semicircular and pretty firm. The remainder of the lower surface is white, with little, if any, general ochraceous tinge; the inside of the tibiæ is quite strongly washed with this color. One specimen (No. 161 Mus. R. R., Wahsatch Mountains, Utah, June 27) is almost immaculate beneath, posterior to the clear cinnamon-rufous breast patch, there being only a very few scattered and minute hastate specks of rust on the abdomen. The remaining five are more or less speckled or barred underneath, the amount of these markings varying with the individual—the lightest-colored being almost as continuously white as that just described, the darkest having the abdomen thickly, though rather faintly, barred. Two of the specimens have the bars on the upper portion of the abdomen (just below the rufous pectoral area) darker rusty and connected by longitudinal streaks of blackish running along the shafts of the feather. The tibiæ may be either immaculate or faintly barred; but the crissum is immaculate in all. The two remaining specimens of the series are quite aberrant in the plumage of the lower parts; thus, No. 65,918, Long Coteau River, Dakota (September 9, 1873), has the abdomen, sides, and tibiæ heavily barred with rufous, of a more rusty, or less ochraceous, tint than that of the breast; these bars are rather broader than the intervening whitish ones, are very irregularly defined, and become narrower and fainter on the tibiæ; the crissum has a small and very faint transverse bar near the tip of each feather. The feathers of the sides have blackish shaft-streaks. No. 5,576, North Platte (August 21, 1856), has the rusty-rufous of the breast continued back to the anal-region and tibiæ; the abdomen, sides, and flanks are variegated only by the sharply-defined black shaft-streaks on each feather; the tibiæ and anal-region are transversely broken by paler bar-like "washings;" the crissum is white with distant bars of rusty.

A series of nineteen adult females in the normal plumage pre-

sents much greater and more complicated variations than does that of the male birds. Fourteen of them have the lower parts posterior to the breast-patch more or less ochraceous (the ground color varying from buff to rufous), and *everywhere*, except on the crissum, heavily barred with darker rusty and blackish-brown; the prevailing form of these bars varies with the individual; in all but one, their direction is decidedly transverse, but as a rule they are neither sharply defined nor regular; on the tibiæ they are narrower, fainter, and more decidedly rufous; on the upper part of the abdomen they are more or less modified in shape by an increased breadth along the shafts of the feathers, sometimes running together, and then forming a median chain of diamond-shaped spots, which are usually more blackish than the other markings. Some specimens have these diamond-shaped spots, the characteristic *pictura* of the lower parts, in which case the transverse bars are indistinct, if not obsolete, but the strong transverse barring is the rule. In the darker of these specimens there is a gradual transition between the uniform brown of the jugulum to the broken tint of the lower breast; and in these specimens the white of the throat is more or less streaked with dark brown. In nine of the fourteen specimens, however, the dark grayish umber jugular area is abruptly defined, with a firm semicircular outline, against the immediately lighter region posterior to it, while the throat of these specimens is plain white, in the form of a well-defined patch. The remaining five specimens differ decidedly from the series above described. Four of them agree in having the lower parts posterior to the breast-patch almost free from markings. The color of these parts is alike in all, and is a creamy white (less pure than in the very light-colored males), with the tibiæ, especially their inner sides, more strongly ochraceous. One of them is so nearly immaculate, that a dozen or so minute hastate specks of brown scattered over the upper portion of the abdomen constitute all the variegation of the lower surface. The most heavily spotted one has large transverse spots along the sides, and more irregular, even some longitudinal, ones along the middle portion of the lower breast. This example differs from the others in having the brown of the jugular patch broken up by a conspicuous spotting of ochraceous-white, this most distinct along the median line. No. 1,271 (Mrs. C. E. Aiken), El Paso, Colorado, May 6, is almost exactly similar. The remaining specimen is a very remark-

able one in every way, and is entirely aberrant and exceptional in its peculiar features. *The relative position of the areas where light and dark markings respectively prevail is exactly reversed*, the pectoral region being white, with a longitudinal tear-shaped spot of blackish-brown on the tip of each feather, while the abdomen, sides, and flanks are so heavily marked with more or less confluent transverse spots and bars of dark brown, that this forms the predominant color of those parts; the tibiae are finely and regularly barred with dark brown. The style of coloration of the lower parts of this specimen strikingly calls to mind that of the adult, normally colored *Archibuteo lagopus* (var. *sancti-johannis*). The gular region is white, with a conspicuous medial stripe of dark brown, while it is bordered on either side by a broader one of the same color. The ear-coverts are so much streaked with white that this color prevails; while the neck is very heavily spotted with the same at the bases of the feathers. The measurements are as follows: wing, 16.70; tail, 9.00; culmen, .95; tarsus, 2.90; middle toe, 1.65. This specimen was obtained May 29, 1868, on the Wahsatch Mountains, Utah, by Mr. L. E. Ricksecker. The sex is queried as male upon the original label. Altogether, it is so far out of the usual range of variation which obtains in the species, that it may possibly eventually prove to belong to another species.

The melanistic plumage grades from individuals only a little darker beneath (with less-defined bars) than the clearly-barréd ones described above, up to others which are entirely black, except the crissum and tail. The latter is always as in the normal plumage, while the former always has some white—this forming the prevailing color in seven out of eight examples. Of the eight specimens before me, only two have the crissum immaculate white, and have much white on the throat. One of them has the tibiae and anal-region narrowly barréd with light rusty. Three others have the white of the crissum marked with a very few, distant, and faint bars of rusty. Two others are broadly barréd with blackish-brown, while the remaining one (No. 12,117, Mazatlan, Western Mexico) has these black bars so much wider than the white ones that the crissum seems black barréd with white, rather than the reverse. Two specimens (No. 12,117, Mazatlan, and No. 22,569, Onion River, Arctic America) are absolutely uniform and continuous brownish-black, except the crissum. No. 6,455, Nebraska, has the breast and tibiae bright rufous, the lining of the wing rusty

white. A male from Arizona in Mr. Aiken's collection has the lining of the wing deep rusty rufous with blackish shaft-streaks, the breast and tibiæ blackish-brown.

The plumage of the young varies between great extremes, and were it not for the specific characters at once recognizable in the peculiar proportions, and characteristic details of structure, certain individuals could not be identified at all. There is, however, an average style of which the specimen described on p. 112 (No. 10,761) is a fair representative. Upwards of twenty specimens have been examined, and sixteen are now before me. Of the series now under consideration, twelve have the ground-, and prevailing, color of the head, neck, and lower parts, soft, fine ochraceous-buff, or deep cream-color. Only one is without spots on the lower parts posterior to the jugulum. On two, the black spotting nearly equals in extent of color the ochraceous;<sup>1</sup> the tibiæ are heavily spotted, upon a rusty ochraceous ground. In one of them, the crissum is also distantly barred. The remainder of the series have the crissum immaculate, five of them have the tibiæ more or less barred, while no two are alike in the quantity of spotting on the breast, abdomen, etc., or in the exact shape and distribution of the spots—though the whole series is intermediate in these respects between the two specimens mentioned above as the light and dark extremes of the series, and which were taken from the same nest.

Three others differ from the above series in having the ground-color of the head, neck, and lower parts nearly white, with only a slight tinge of ochraceous, and with the few markings of the lower surface restricted chiefly to the sides of the breast. They are from Buenos Ayres, Costa Rica, and Nebraska; and though from localities so remote from each other, they are almost as nearly duplicates of each other as is ever seen—but of these specimens, I have more to say beyond (see page ). The remaining one is a young example of the melanistic plumage; and in it the black markings of the lower parts of course predominate over the light ones. The ground-color may, in fact, be considered as brownish-black, variegated with ochraceous.

The upper parts vary with the individual in the proportionate

<sup>1</sup> One of these specimens was taken from the same nest along with the very light-colored one mentioned. Their parents were a very white-bellied male, and a very uniformly blackish female!

amount of black and ochraceous, though the former is always greatly in the excess. The latter is not unfrequently absent, but a conspicuous spotting and bordering of ochraceous may be taken as the rule, exemplified by probably 80 or 90 per cent. of the specimens.

Two specimens from Wisconsin, in the Museum of the Philadelphia Academy, differ from any in the National collection, though they are as unlike each other as any which I ever compared. One of them (the type of *B. bairdii*, Hoy) is unusually light-colored underneath, and very continuously blackish on the upper surface. The lower parts are light buff or cream-color, with a few triangular spots and shaft-lines of black on the sides of the breast; the lining of the wing is entirely immaculate.

The other specimen (Menomonee Marsh, near Milwaukee, spring of 1851) is just the opposite extreme in plumage, being unusually dark for a young bird. On the upper parts, the continuity of the black is scarcely broken; while beneath, the black spots are so large as to cover nearly the whole surface. The pileum, and nape and broad "mustache" stripe from the rictus down to the jugulum, with nearly the whole pectoral region, unbroken black, leaving only the gular region and sides of the head pale, but even these places are thickly streaked. The measurements are as follows: Wing, 15.00; tail, 8.80; tarsus, 2.35; middle toe, 1.50.

A specimen from Iowa (No. 59,052, L. E. Ricksecker) is like the average western style. A young female from Arizona (September 23, Captain Charles Bendire, U. S. A.) in Mr. Aiken's collection differs from the type of "*B. bairdii*" only in deeper shades of colors—as nearly as my memory of the latter justifies comparison. The Massachusetts specimen in the possession of Mr. Brewster I have seen; it is very dark, closely resembling, according to my recollection of it, the black example from Wisconsin described above.

The following detailed descriptions are taken from the best representatives of each stage of plumage in the collection:—

#### *Normal phase.*

*Adult* = *B. swainsoni*, Bonaparte. Male (53,105, Truckee River, Nevada, July; C. King, R. Ridgway): Head, neck, and upper parts blackish-brown; scapulars slightly variegated with a rufous mottling; upper tail-coverts white tinged with rufous, and with trans-

verse bars of blackish-brown, about six on each feather. Tail dark brown like the back, approaching back terminally, basally with a slight hoary cast; crossed by about ten narrow, very obscure bands of nearly black. Front and whole throat clear white, immaculate, and sharply defined against the surrounding blackish; lores dusky. Whole breast, cinnamon-rufous (forming a wide, sharply defined patch), marked laterally with the brown of the neck; each feather with a shaft-line of black; rest of lower parts, including whole lining of the wing, continuous ochraceous-white, the latter region unvariegated; sides with sparse, faint, transverse bars of rufous, and shaft-lines of darker. Under side of primaries light slate anterior to emargination, beyond which they are black; slaty portion crossed by very obscure bars of darker. Fourth quill longest, third scarcely shorter; second equal to fifth; first intermediate between seventh and eighth. Length, 19.75; extent, 48.00; wing, 15.40; tail, 8.00; tarsus, 2.32; middle toe, 1.60. Weight  $1\frac{1}{2}$  lbs. Bill slate-black, bluish basally; cere, and angle of mouth, light dull lemon-yellow; iris deep hazel; tarsi and toes deep chrome yellow; claws black.

Female (58,507, Great Salt Lake City, Utah, May; C. King, R. Ridgway): Similar to the male, but pectoral area blackish-brown, like the back; blackish-brown of upper surface untinged with rufous, all the feathers, however, fading on edges; bands of the tail scarcely distinguishable on outer webs; white of forehead very restricted; lining of the wing marked with small cordate or deltoid spots of black; under surface of primaries plain deep slate. Abdomen and sides variegated with a few irregular longitudinal spots, and on the latter, transverse bars of dark brown; tibiae with faint bars of rufous. Fourth quill longest; third scarcely shorter; second very slightly shorter than fifth; first intermediate between seventh and eighth. Length, 21.50; extent, 54.00; wing, 16.50; tail, 8.50; tarsus, 2.70; middle toe, 1.70. Weight,  $2\frac{3}{4}$  lbs.

Young = *B. bairdii*, Hoy, and *B. oxypterus*, Cassin (10,761, Rocky Mountains, September; C. Drexler): Head, neck, and entire lower parts fine delicate ochraceous, or cream-color; feathers of the crown, occiput, and neck, each with a medial stripe of black, of less amount, however, than the ochraceous; forehead, superciliary region, and ear-coverts, with only a few very fine hair-like shaft-streaks; on the chin, and across the cheeks, are longitudinal spaces of blended streaks of black, the latter forming a conspic-

uous "mustache;" sides of the breast with large ovate spots of black; middle of the breast with less numerous, smaller, and more longitudinal ones of the same; sides, flanks, and abdomen, with broad hastate spots, more irregular and transverse on the former; throat, tibiae, anal-region, and lower tail-coverts immaculate. Upper surface generally, deep black, the feathers bordered with pale ochraceous, the scapulars and middle wing-coverts much variegated with the same; secondary-coverts, secondaries, and primaries narrowly tipped with white. Upper tail-coverts pale ochraceous, barred with black. Tail ashy-brown, very much lighter than the rump (more hoary than in the adult), narrowly, but clearly, tipped with white, and crossed by ten or twelve narrow bands of black, more distinct than in the adult. Under surface of primaries more whitish than in the adult.

Male (No. 8550, Fort Fillmore, New Mexico; Dr. T. C. Henry, U. S. A.):<sup>1</sup> Head, neck, and lower parts, soiled ochraceous-white. Feathers of the head above, and neck laterally and behind, with medial stripes of blackish-brown; jugulum, breast, sides, flanks, and abdomen, with large rounded spots of blackish-brown; tibiae with transverse bars of the same; lower tail-coverts almost immaculate. A conspicuous "mustache" of blended dusky streaks, from angle of the mouth across the cheeks, the dusky suffusing the lores. Whole auricular region scarcely variegated pale yellowish; entire chin and throat immaculate. Prevailing tint above, blackish-brown, becoming purplish-black on primaries; outer surface of wing plain, but interscapular region somewhat variegated with partially concealed, irregular blotches of deeper ochraceous than the lower parts; upper tail-coverts with pairs of indistinct white spots. Tail grayish-brown (white at extreme base), crossed with about ten narrow, indistinct, but regular bands of dusky. Lining of the wings yellowish-white, with sparse cordate spots of blackish, this tint prevailing over the under primary coverts; under surface of the primaries pure purplish-black after their emargination, but anteriorly plain hoary brown, growing paler basally. On inner webs are very indistinct transverse spots of dusky, touching neither the edge nor shaft of the feather, and entirely concealed when the wing is closed. Shafts of primaries pure white on under side; on outer side, dark brown. Wing

<sup>1</sup> Type of *B. oxypterus*, Cassin!

formula, 3-4-2-5-6-7-1, 8. Three outer primaries emarginated on inner webs; second, third, and fourth, sinuated on outer. Wing, 13.70; tail, 7.00; tarsus, 2.10; middle toe, 1.35. Primaries project beyond secondaries, 5.50.

Female (33,508, San José, Costa Rica; J. Carmiol):<sup>1</sup> Differs from the type chiefly in lighter colors. The whole forehead very broadly immaculate dull white, this continuing back to the occiput in a broad unstreaked superciliary stripe; along the upper edge of the ear-coverts is a rusty suffusion, with condensed, fine dusky streaks, forming an indistinct stripe separating the wholly white ear-coverts from the supraoral stripe; the "mustache" is very conspicuous; the breast has a few large tear-shaped spots of clear blackish-brown, and the sides have very sparse, irregular, and more sagittate spots of the same; the whole posterior parts are immaculate. The upper parts are more variegated with paler, the wing-coverts and rump having the feathers irregularly bordered with whitish. The upper tail-coverts are white, barred with dark brown. Tail, hoary brown, crossed by nine or ten nearly obsolete, narrow bands of dusky. Whole lining of the wings immaculate, except the conspicuous patch on the primary coverts. The whole under surface of the primaries is uniform slaty, gradually deepening into black towards ends. Wing-formula, 3-4-2-5-6-7, 1. Wing, 15.00; tail, 8.00; tarsus, 2.45; middle toe, 1.55. Primaries project beyond secondaries, 6.00.

The specimen from Buenos Ayres (No. 55,876, ♂ *juv.*, Conchitas, November, 1868; Wm. H. Hudson) was labelled by Mr. Selater "*B. albicaudatus*," and so published (Proc. Zool. Soc., Lond., 1869, 634). This species, however, though belonging strictly to the same section of the genus with *B. swainsoni*, and being in fact its nearest ally, is yet very distinct, having altogether larger and longer tarsi. The National Museum contains a fine suite of this species, illustrating the variations to which it is subject. This specimen is exactly like the Costa Rican one just described.

<sup>1</sup> Type of description in Baird, Brewer, and Ridgway's Hist. N. Am. Birds (vol. III. p. 267) of *B. swainsoni* var. *oxypterus*. "*B. albonotatus*" Lawr., Ann. IV. 7. Lyc. N. H., IX. Ap'l, 1868, 133!

*Melanistic Phase.*

*Adult*, = *B. insignatus*, Cassin, and *B. fuliginosus*, Selater. Male (No. 12,117, Mazatlan, Mexico; Colonel Abert): Entirely fuliginous-black, darkest on head and back; no white on forehead. Tail cinereous-umber, crossed with seven very regular and continuous bands of black, the subterminal one of which is broadest. Lower tail-coverts, and larger under wing-coverts, with transverse bands of dull white; lining of the wing unvaried black; under surface of primaries silvery-white, that portion beyond their emargination black, the whitish portion crossed by distant, very indistinct transverse bars. Third quill longest; fourth and fifth scarcely shorter, and nearly equal; second equal to sixth; first shorter than eighth. Tail even; scutellæ of the tarsus very faintly defined, or, in fact, scarcely detectable (probably accidental). Wing, 13.00; tail, 7.00; tarsus, 1.95; middle toe, 1.55.

Male (22,567, Onion River; R. McFarlane): Entirely brownish-black, whole under surface of wings included; lower tail-coverts equally barred with white and black. Tail blackish-slate, narrowly paler at the tip, and crossed with numerous oblique bars of dusky black; upper tail-coverts barred obsoletely with lighter slaty-brown. Wing, 15.00; tail, 8.00; tarsus, 2.20; middle toe, 1.50. Fourth quill longest; third, next; second, shorter than fifth; first, slightly shorter than eighth.

Female (12,927, Utah Valley, July; C. S. McCarthy): Similar; lower tail-coverts white, tinged with rusty, and barred with brown; tibiæ tinged with chestnut. Wing, 16.50; tail, 8.80; tarsus, 2.60; middle toe, 1.65. Third and fourth quills equal and longest; third shorter than fifth; first equal to eighth.

The melanistic specimen from Mazatlan (No. 12,117) described above agrees perfectly with Mr. Selater's excellent figure of his *B. fuliginosus* above cited, and the only discrepancy in the description is in the measurements, those given for the *B. fuliginosus* being, wing, 12.00, tail, 6.50, and tarsus, 2.60. The difference in the length of the wing is certainly not great, while the discrepancy as regards the length of the tarsus it is probable results from a different mode of measurement.

*Material examined.*—National Museum, 88 specimens; Museum of the Academy of Natural Sciences of Philadelphia, 3; of the Boston Society Natural History, 1; of the Museum of Compara-

tive Zoology, Cambridge, Mass., 1; of George N. Lawrence, Esq., 2; of William Brewster, Esq., 1; of Charles E. Aiken, Esq., 3; of R. Ridgway, 5. Total number of specimens examined, 104.

**Buteo (Crazirex) pennsylvanicus (Wils.).**

*Fulco pennsylvanicus*, Wils. Am. Orn. VI. 92, pl. liv. f. 1, 1812 (nec. V. pl. 46, fig. 1!). Lath. Gen. Hist. I. 263, 1821. Aud. B. Am. pl. xci. 1831; Orn. Biog. I. 461, 1831. Bonap. Ann. Lyc. N. Y. II. 29, 434; Isis, p. 1137, 1832. Nutt. Man. I. 105, 1833. Temm. Pl. Col. 67, 1836. —*Buteo pennsylvanicus*, Bonap. Oss. Cuv. Rég. An. p. 35, 1830; Eur. & N. Am. B. p. 3, 1838; Consp. Av. p. 19, 1850. Aud. Syn. p. 7, 1839. Brew. (Wils.). Am. Orn. Syn. p. 648, 1852. Gray, Gen. sp. 8, 1844; List B. Brit. Mus. p. 16, 1844; Hand List, I. 1869, 7. Cass. B. Cal. & Tex. Syn. p. 100, 1854. Strickl. Orn. Syn. I. 32, 1855. De Kay, Zool. N. Y. II. 11, pl. v. fig. 11, 1844. Cass. Birds N. Am. 29, 1858. Dresser, Ibis, 1865, 325 (Texas), Sci. P. Z. S. 1858, 451 (Ecuador, winter); P. Z. S. 1857, 211 (Orizaba); Ib. 261 (Upper Amazon). Caban, Journ. II. lxxxii. (Cuba). Gundl. Rept. 1865, 223 (Cuba, resident). Lawr. Am. N. Y. Lyc. VII. 1861, 288 (Panama); Ib. IX. 133 (Costa Rica). Schl. Mus. P. B. Buteones, 1862, 20; Rev. Acc. 1873, 109. Allen, Bull. Mus. Comp. Zool. II. 1871, 330. Gundl. J. f. O. 1871, 266. Pelz. Orn. Bras. 1871, 396. Coues, Key, 1872, 217. Sci. & Salv. Nom. Neot. 1873, 119.—*Astur pennsylvanicus*, Cuv. Reg. An. (ed. 2), I. 332, 1829. James. (Wils.) Orn. I. 65. Sund. Disp. Acc. Hemeroharp. 1874, 24.—*Fulco latissimus*, Wils. Am. Orn. (last ed.), VI. 1812, 92, pl. liv. f. 1.—*Astur latissimus*, Jard. (ed. Wils.) Am. Orn. II. 1832, 294.—*Buteo latissimus*, Sharpe, Cat. Acc. B. M. 1874, 193.—*Fulco wilsoni*, Bonap. Obs. Wils. Nomencl. J. Ac. Nat. Sci. Phil. III. 348.—*Pacilopternis wilsoni*, Kaup, Isis, 1847, 330; Cont. Orn. 1850, 75.—*Buteo wilsoni*, Bonap. Consp. I. 1858, 19.—*Sparvius platypterus*, Viell. Enc. Méth. III. 1823, p. 1273 (quot. Wils. pl. liv. fig. 1).

*Hab.*—Eastern Region of North America, eastern Middle America, south to Ecuador (Selater), Upper Amazon (Selater), and Caraccas (New York Mus.). Cuba (resident).

*Diagnosis.*—Adult: Upper surface dark umber-brown, the feathers gradually paler toward edges; on the back, the feathers more uniformly dusky, causing a prevalent blackish appearance. Rump and upper tail-coverts blackish vandyke-brown, the latter tipped with pure white, and with a concealed bar of the same, about the middle of each feather. Tail dull black, with an indistinct terminal band of dull brown, this fading terminally into whitish; across the middle of the tail a broad band of dull light umber (in some individuals approaching dull white) about three-fourths of an

inch in width; about as far anterior to the main band as this is from the tip is another much narrower and less distinct band of the same color, crossing just beyond the ends of the coverts, or concealed by them. Primaries uniform brownish-black, fading on the terminal edge into pale brown. Head above, and broad but inconspicuous "mustache," running from the rictus downward across the cheek, dull black; the crown posteriorly, with the occiput and nape, having the dull black much broken, caused by the lateral streaks of dull rufous on all the feathers; this dull rufous tint prevails on the rest of the head and neck, as well as the breast, leaving the lores and chin and lateral portion of the frontlet alone whitish; throat streaked with blackish. Beneath dull brownish-rufous, that of the breast almost unvariegated; medially, however, are roundish spots of white on opposite webs, but these are not confluent; posteriorly, these spots become gradually more numerous and more transverse, forming on the flanks transverse bands, almost continuous; on the tibiae the white prevails, the rufous bars being more distant, and connected only by a brown shaft-line; lower tail-coverts with less numerous, transverse spots of dull rufous. Lining of the wing ochraceous-white, with sparse, rather small, irregularly deltoid spots of dull rufous; under surface of the primaries unvariegated white, as far as their emargination, beyond which they are black. Fourth quill longest; third a little shorter; second intermediate between fifth and sixth; first about equal to the ninth. Female (extremes 30,969, Brookline, Mass., and 30,895, Mirador, Mexico—the latter the larger): Wing, 11.00–11.30; tail, 6.80–7.10; tarsus, 2.30; middle toe, 1.30. Male (32,309, Moose Factory, Hudson's Bay Territory): Wing, 10.50; tail, 6.30; tarsus, 2.30; middle toe, 1.20.

*Young male, second year?* (39,106, Remedios, Cuba, June; N. H. Bishop): Upper parts similar to adult, but a reddish tint appreciably washing the edges of the interscapulars and (less noticeably so) the scapulars. Bands on tail nearly as in adult, but very near the base is a fourth, very narrow and faintly defined, pale band, while the bases of all the feathers are much mottled with white. Dull rufous of the breast not continuous, but in the form of large longitudinal broad spots, occupying the greater middle portion of each feather; abdomen, sides, and tibiae with smaller and more cordate spots of dull rufous; the lower tail-

coverts immaculate; the decided ochraceous tinge beneath, deepest posteriorly.

*Young, first year* (11,984, Washington, D. C.): The blackish above is much variegated, being broken by narrow rusty borders to the interscapulars, rump-feathers, and lesser wing-coverts, the broader and more ochraceous borders to scapulars and greater wing-coverts, and partially concealed whitish spotting on the former. Upper tail-coverts white, with broad bars of blackish-brown; secondaries and primaries edged terminally with whitish. Tail dull umber-brown, growing darker terminally; narrowly tipped with white, and crossed with six obscure, narrow bands of dusky, the (concealed) bases of all the feathers white. Superciliary region, cheeks, chin, throat, and entire lower parts, delicate pale ochraceous, or whitish cream-color; a conspicuous "mustache," a medial longitudinal series of streaks on the throat, with large longitudinal ovate spots on sides of breast, cordate spots on sides and flanks, and sagittate spots on tibiae, clear blackish-brown. The ochraceous deepest on the abdomen and crissum. Wing beneath as in adult.

A very young bird, scarcely fledged (33,598, Milltown, Me.; G. A. Boardman), differs from the last in a much more continuous black shade above, the deeper ochraceous beneath, and larger, as well as more numerous, blackish spots beneath.

*Remarks.*—In the adult plumage of this species, the principal variation is in the continuity or distinctness of the anterior light band on the tail, and the extent and depth of shade of the brown beneath. The first feature is characteristic of most specimens, only one (55,980, ♂, Costa Rica) being without it; it is broadest and most conspicuous, as well as less concealed by the coverts, in the females, and this appears to be the principal sexual difference. The dull brownish-rufous of the under parts is most prevalent in a specimen from Mirador, Mexico (30,895, ♀? September; Dr. Sartorius), in which specimen the breast is almost continuously of this color, and the lower tail-coverts are strongly barred (or transversely spotted) with the same; the ground-color beneath is also more ochraceous than in any other individual. In the Costa-Rican specimen (the one lacking the anterior tail-band), the brown beneath is quite different from that of the others, being of a much more ashy shade; the lower tail-coverts are also immaculate. The brown markings beneath are most sparse in 20,389, from Coban,

Vera Paz (January; O. Salvin); in this, also, the tail-bands are very distinct, and almost white.

A young bird from Costa Rica (30,412; Dr. Frantzius) is exactly similar to No. 27,048, from Fort Garry, Selkirk Settlement.

*Material examined.*—U. S. National Museum, 32; Museum of the Academy of Natural Sciences of Philadelphia, 6; of Boston Society, 3; American Museum, New York, 2; Museum Comparative Zoology, Cambridge, 2; G. N. Lawrence, Esq., 5; R. Ridgway, 2. Total number of specimens examined, 52.

*Measurements.*

	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.	Specimens.
♂	9.85—10.70	6.50—7.00	.70—...	2.15—2.80	1.20—1.38	11
♀	11.00—11.40	7.00—8.00	.70—78	2.20—2.70	1.30—1.40	14